

ABSTRACT

The invention provides methods and systems for controlling the expression and,
5 in general, the cellular activity of preselected polynucleic acid molecules. The invention
also provides methods and systems for genetically modifying cells and multi-cellular
organisms to impart resistance to viruses. The invention further provides methods and
systems for genetically modifying cells and multi-cellular organisms so that they
diagnostically report viral infection. One aspect of the invention involves rendering
10 target polynucleic acid molecules as functional templates for at least one
template-directed polynucleic acid polymerase so that utilization of the polynucleic acid
molecule as a template by the polymerase modulates the activity of the targeted
polynucleic acid molecule. Other aspects of the invention involve
rendering selected polynucleic acid molecules as targets for RNA silencing,
15 whether or not the silencing is polymerase-mediated.